

Cow-Calf Enterprise

**Financial and Production
Targets for Farm Managers**



**Saskatchewan
Agriculture
and Food**

Workbook Series

Foreword

Farm management is the process of setting goals (both production and financial) for the farm business and then assessing how present production practices are meeting these goals. Often the problem is an absence of goals for the farm manager to strive towards. This workbook provides financial and production information that can be used as goals for a beef cow-calf enterprise. This information will allow producers to identify adjustments to their beef cow-calf enterprise that will allow them to achieve their goals.

This workbook also contains a benchmark enterprise that outlines the calculations needed to measure financial progress. Accompanying this information, is a workbook format that will allow producers to work through the same process for their beef cow-calf enterprise. This format will provide a complete analysis of the

enterprise, as well as a comparison of the enterprise to financial and production targets for the industry.

In addition, two tables from the publication titled "1998 Production Year Saskatchewan Cow-calf Costs and Returns Program" have been added to this publication. These tables show the actual cost and return that a group of cow calf producer recorded for 1996, 1997 and 1998.

Other publications available from the Rural Service Centre that provide information for beef producers are:

- 1998 Production Year Saskatchewan Cow-calf Costs and Returns Program
- Backgrounding Beef Cattle In Saskatchewan
- Cow Calf Lease Agreements
- Pasture Lease Agreements

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Introduction

This publication is for producers who are:

- a) interested in learning more about the economics and production aspects of a beef cow-calf enterprise as a farm enterprise; or
- b) already in production and would like to compare their enterprise to the industry production and financial guidelines in order to make further management decisions.

This publication is set up with a benchmark enterprise outlined on the left hand pages, with the facing page set up in a workbook format to enable producers to follow through the process for their enterprise. The procedures for the individual cost calculations are outlined and the resulting totals are then transferred to the summary budget sheet near the back of the booklet. A summary budget for both the benchmark farm of 100 cows, and the producer's enterprise can also be found near the back of the book.

It should be remembered that the values used in this publication are guidelines that are based on industry averages as well as consensus of industry experts. An assumption was made that the benchmark enterprise would use current technology and would obtain production coefficients that are above the industry average, but can be obtained in a well-run enterprise. Adjustments to the budget may have to be made in order to ensure that the results are consistent with the individual's operation or expectations. Production levels can dramatically affect the profitability of a

cow-calf enterprise. In order to illustrate this, the last section of this publication examines two production factors that can have a sufficient impact on the profitability of the cow-calf enterprise.

The budget in this publication makes no attempt to examine the cash flow associated with this enterprise. It should be understood, while an enterprise may show long-term feasibility, cash flow constraints during the start-up or expansion phase may seriously affect the long-term viability of an enterprise. It is, therefore, recommended that a cash flow projection be completed before undertaking an enterprise of this type. As a general rule, a beef cow-calf business should have funds available to cover cash flow items equal to at least one-third of the expected annual income.

Using this Workbook and Worksheets

Producers should complete the following worksheets using their actual or projected production figures. The numbers in brackets - example (a1), identify a specific figure and are used throughout this publication to indicate the information that is used in calculations. Shaded numbers beside capitalized letters in bold [example, **\$61,287 (A)** page 4] are totals that should be transferred to the summary sheet at the beginning (page 2) of the booklet in order to complete the farm budget.

Summary Statement - Cow-Calf Enterprise - 100 Cows

Revenue	Benchmark Farm			Your Farm	
	Total	Per Cow		Total	Per Cow
Calf Sales	\$61,287	\$612.87	(A)	_____	_____
Operating Costs					
Feed	\$14,164	\$141.64	(B)	_____	_____
Bedding	2,900	29.00	(C)	_____	_____
Veterinary and Medicine	3,199	31.99	(D)	_____	_____
Breeding	2,924	29.24	(E)	_____	_____
Herd Replacement	6,000	60.00	(F)	_____	_____
Death Loss	1,100	11.00	(G)	_____	_____
Marketing	2,696	26.96	(H)	_____	_____
Community Pasture Fees	3,320	33.20	(I)	_____	_____
Fuel, Lube and Repairs	1,320	13.20	(J)	_____	_____
Manure Removal	1,650	16.50	(K)	_____	_____
Facility and Fence	1,082	10.82	(L)	_____	_____
Miscellaneous	700	7.00	(M)	_____	_____
Subtotal Operating	<u>\$41,055</u>	<u>\$410.55</u>	(N)	_____	_____
Operating Interest	\$ 2,052	\$ 20.52	(O)	_____	_____
Total Operating Costs	<u>\$ 43,107</u>	<u>\$ 431.07</u>		_____	_____
Net Cash Income	<u>\$18,180</u>	<u>\$181.80</u>		_____	_____
Fixed Costs					
Depreciation					
Facilities	\$1,569	\$15.69	(P)	_____	_____
Equipment	1,437	14.37	(Q)	_____	_____
Interest on Investment					
Facilities	1,098	10.98	(R)	_____	_____
Equipment	711	7.11	(S)	_____	_____
Breeding herd	6,300	63.00	(T)	_____	_____
Grazing Costs	<u>\$5,774</u>	<u>\$57.74</u>	(U)	_____	_____
Total Fixed Costs	<u>\$16,889</u>	<u>\$168.89</u>		_____	_____
Total Costs	<u>\$59,996</u>	<u>\$599.96</u>		_____	_____
Return to Labour and Management	<u>\$ 1,291</u>	<u>\$ 12.91</u>		_____	_____

The beef cow-calf cost of production study provided an allowance of \$62.28 for paid and unpaid labour and management.

Production Profile

The following production levels were used for the benchmark herd. Other assumptions that are needed for the calculations are

outlined throughout the budget. Producers should enter their expectations on the accompanying worksheets.

Location of Benchmark Farm - Northern Saskatchewan (mixed farm)

	Benchmark Farm	Your Farm
Number of cows	= 100 cows	_____ (a1)
Average cow weight	= 1200 pounds	_____
Number of bulls	= 2 bulls	_____ (a2)
Calving per cent	= 94 %	_____
Post calving death loss	= 1.5 %	_____
Weaning per cent	= 92.5 %	_____ (a3)
Average weaning weight of steers	= 552 pounds	_____ (a4)
Average weaning weight of heifers	= 529 pounds	_____ (a5)
Average weaning weight of calves ((a4)+(a5))/2	= 540 pounds	_____ (a6)
Cow replacement rate	= 15 %	_____ (a7)
Winter feeding period	= 195 days	_____ (a8)
Number of cows put in community pasture	= 40 head	_____ (a9)
Purchase value of replacement heifers	= \$1100 per cow	_____ (a10)
Selling price of cull cows	= \$700 per cow	_____ (a11)
Purchase value of replacement bulls	= \$2000 per cow	_____ (a12)
Selling price of cull bulls	= \$1000 per cow	_____ (a13)

Revenue

In the Benchmark example, it is assumed that all calves are sold and replacements are purchased at market value. In completing the figures for your farm you may want to keep

replacements from your calf crop. Therefore the number of calves sold on line (b7) may be less than the number of calves produced (b3).

Calf Revenue

		Benchmark Farm	Your Farm
Number of cows - transfer (a1)	=	100 cows	_____ (b1)
Weaning per cent - transfer (a3)	=	92.5 %	_____ (b2)
Number of calves produced (b1) x (b2)	=	93 calves	_____ (b3)
Average calf weight - transfer (a6)	=	540 pounds	_____ (b4)
Average calf price *	=	\$1.22 /pound	_____ (b5)
Revenue/calf (b4) x (b5)	=	\$659 /calf	_____ (b6)
Number of calves sold (b3)	=	93 calves	_____ (b7)
Total calf revenue (b6) x (b7)	=	██████ /year (to line A, page 2)	_____ (A)

- * Market price was determined by taking the average market price (\$1.22/pound) estimated by the producers in the "1998 Production Year Saskatchewan Cow-calf Costs and Returns" publication.

Operating Costs

Operating costs are those costs that are incurred as a direct result of production; therefore, these costs would cease if

production ceased. In order to be profitable in the short run, a producer must cover all operating costs.

Feed

The following feed rations and practices are typical of those used on a Northern Saskatchewan mixed farm. These numbers are used to calculate the operating costs for the benchmark farm. Feed is a major item in the

cost of a cow-calf enterprise. Feed costs for your farm need to be closely calculated. The value for home grown feeds should be based on their value if sold to other producers.

Feed component costs

		Benchmark Farm	Your Farm
Roughage*	=	\$50.00 /tonne	_____ (c1)
Barley**	=	\$75.80 /tonne	_____ (c2)
Straw*	=	\$29.33 /tonne	_____ (c3)
Salt - \$4.50/25 kg	=	\$0.18 /kg	_____ (c4)
1:1 trace mineral - \$21.00/25 kg	=	\$0.84 /kg	_____ (c5)

* Barley, hay and straw prices are taken from the "1998 Production Year Saskatchewan Cow-calf Costs and Returns".

i) Roughage

Tonnes of roughage/cow	=	2 tonnes/cow	_____ (c6)
Number of cows - transfer (a1)	=	100 cows	_____ (c7)
Total tonnes of roughage needed for cows - (c6) x (c7)	=	200 tonnes	_____ (c8)
Price/tonne - transfer (c1)	=	\$50 /tonne	_____ (c9)
Total roughage cost for cows (c8) x (c9)	=	\$10,000 /year	_____ (c10)

Operating Costs (continued)

ii) Grain (It is assumed that the Benchmark farm uses no grain for cows, thus this area is left blank.)

		Benchmark Farm		Your Farm	
Kg of grain/day	=	_____	kg/day	_____	(d1)
Number of days fed	=	_____	days	_____	(d2)
Number of cows - transfer (a1)	=	<u>100</u>	cows	_____	(d3)
Kg of grain needed (d1) x (d2) x (d3)	=	<u>280</u>	kg	_____	(d4)
		÷ 1000		÷ 1000	
Tonnes of grain needed for cows	=	<u>28</u>	tonnes	_____	(d5)
Price/tonne - transfer (c2)	=	\$ <u>75</u>	/tonne	_____	(d6)
Total grain cost for cows (d5) x (d6)	=	\$ <u>2,100</u>	/year	_____	(d7)

iii) Salt (cobalt iodized)

Kg/cow/year	=	12	kg/cow	_____	(d8)
Number of cows - transfer (a1)	=	100	cows	_____	(d9)
Kg of salt needed - (d8 x (d9)	=	1200	kg	_____	(d10)
Price/kg - transfer (c4)	=	\$0.18	/kg	_____	(d11)
Total cost of salt (d10) x (d11)	=	\$216	/year	_____	(d12)

iv) Mineral (1:1 trace)

Kg/cow/year	=	22	kg/cow	_____	(d13)
Number of cows - transfer (a1)	=	100	cows	_____	(d14)
Kg mineral needed - (d13) x (d14)	=	2200	kg	_____	(d15)
Price/kg - transfer (c5)	=	\$0.84	/kg	_____	(d16)
Total cost of mineral (d15) x (d16)	=	\$1848	/year	_____	(d17)

Total cost of feed (including salt and minerals)	=	\$14,164	/year	_____	(B)
(c10) + (d7) + (d12) + (d17)					(to line B, page 2)

Operating Costs (continued)

Bedding		Benchmark Farm		Your Farm	
Tonnes bedding/cow/year	=	1	tonnes/cow	_____	(e1)
Number of cows - transfer (a1)	=	100	cows	_____	(e2)
Total tonnes of bedding needed (e1) x (e2)	=	100	tonnes	_____	(e3)
Price/tonne of bedding - transfer (c3)	=	\$29	/tonne	_____	(e4)
Total bedding cost for cows (e3) x (e4)	=	\$2,900	/year	_____	(C)
				_____	(to line C, page 2)

Veterinary and Medicine

The following herd health practices were used for the benchmark herd. The prices are

guidelines only, and producers should check with their local veterinary for actual costs.

i) Cows		Benchmark Farm		Your Farm	
IBR, BVD, PI3, BRSV (killed)	=	\$2.90	/cow	_____	(f1)
Scour vaccine	=	\$3.00	/cow	_____	(f2)
Ivomec/Dectomax	=	\$7.50	/cow	_____	(f3)
ADE (2 treatments)	=	\$1.00	/cow	_____	(f4)
Fly tag	=	\$1.80	/cow	_____	(f5)
Medicine cost/cow (f1) + (f2) + (f3) + (f4) + (f5)	=	\$16.20	/cow	_____	(f6)
Number of cows - transfer (a1)	=	100	cows	_____	(f7)
Total medicine cost for cows (f6) x (f7)	=	\$1620	/year	_____	(f8)
ii) Calves					
IBR, BVD, PI3, BRSV & Hemophilus (\$3.00) plus 7 Way Blackleg & Hemophilus Booster (\$1.75)	=	\$4.75	/calf	_____	(f9)
Flytag	=	\$1.80	/calf	_____	(f10)
Medicine cost/calf (f9) + (f10)	=	\$6.55	/calf	_____	(f11)
Number of calves weaned transfer (b1)	=	93	calves	_____	(f12)
Total medicine cost for calves (f11) x (f12)	=	\$609.15	/year	_____	(f13)

Operating Costs (continued)

iii) Veterinary services (Assume four visits for a total of five hours.)

		Benchmark Farm		Your Farm	
Veterinary charge	=	\$110.00	/hour	_____	(f14)
Number of hours	=	5	hours	_____	(f15)
Total veterinary fees	=	\$550	/year	_____	(f16)
Mileage (Assume 70 km round trip.)					
Km/round trip	=	70	km	_____	(f17)
Price/km	=	\$1.50	/km	_____	(f18)
Number of trips	=	4	visits	_____	(f19)
Total mileage charge	=	\$420	/year	_____	(f20)
Total veterinary and medicine cost (f8) + (f13) + (f16) + (f20)	=	\$3,199	/year	_____	(D) (to line D, page 2)

Breeding

The benchmark enterprise is set up assuming that 40 cows will be sent to PFRA pasture, while the remaining 60 will be pastured on

owned and Crown lease land. Producers should fill in the sections that apply to their enterprise

		Benchmark Farm		Your Farm	
PFRA pasture - breeding cost per cow	=	\$34	/cow	_____	(g1)
Number of cows sent	=	40	cows	_____	(g2)
Total community pasture breeding fees (g1) x (g2)	=	\$1360	/year	_____	(g3)

Bull costs (Assume bull purchase price of \$2000 with \$1000 cull value.)

i) Feed

Tonnes roughage/bull/year	=	3	tonnes	_____	(g4)
Price of roughage - transfer (c1)	=	\$50	/tonne	_____	(g5)
Total roughage cost/bull (g4) x (g5)	=	\$150	/bull	_____	(g6)

Operating Costs (continued)

ii) Grain

		Benchmark Farm		Your Farm	
Kg barley/day	=	3	kg/day	_____	(g7)
Number of days fed	=	100	days	_____	(g8)
Kg barley/bull/year - (g7) x (g8)	=	300	kg/bull	_____	(g9)
		÷ 1000		_____	÷ 1000
Tonnes of barley/bull	=	.30	tonnes	_____	(g10)
Price/tonne - transfer (c2)	=	\$75.00	/tonne	_____	(g11)
Cost of barley/bull/year	=	\$22.50	/bull	_____	(g12)
(g10) x (g11)					

iii) Salt and minerals (Assume same costs as for cow-calf pair on page 6.)

Salt cost/bull/year	=	\$2.16	/bull	_____	(g13)
Mineral cost/bull/year	=	\$11.88	/bull	_____	(g14)
Total salt and mineral/bull/year	=	\$21.84	/bull	_____	(g15)
(g13) + (g14)					

iv) Veterinary and medicine

Veterinary exam	=	\$20	/bull	_____	(g16)
Semen test	=	\$60	/bull	_____	(g17)
Veterinary cost	=	\$10	/bull	_____	(g18)
Total veterinary and medicine	=	\$90	/bull	_____	(g19)
cost/bull/year - (g16) + (g17) + g(18)					

v) Pasture (Use grazing cost for cow-calf pair based on the average of Crown lease and owned pasture (t18) page 22.)

Pasture cost/bull - transfer (t18)	=	\$113	/bull	_____	(g20)
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vi) Investment cost

(Purchase price + cull value) x investment rate
2

<u>(\$2000 + \$1000)</u> x 7%	=	\$105	/bull	_____	(g21)
2					

Operating Costs (continued)

vii) Replacement cost	Benchmark Farm	Your Farm
(Assume bulls are kept 4 years.)		
<u>(Purchase price - cull value)</u> years kept		
(\$2000 - \$1000) 4 years	= \$250 /bull	_____ (g22)
viii) Death loss (Assume 2% death loss.)		
<u>(Purchase price + cull value)</u> x % death loss 2		
(\$2000 + \$1000) x 2% 2	= \$30 /bull	_____ (g23)
Total cost/bull (g6) + (g12) + (g15) + (g19) + (g20) + (g21) + (g22) + (23)	= \$782 /bull	_____ (g24)
Number of bulls - transfer (a2)	= 2 bulls	_____ (g25)
Total cost for home breeding (g24) x (g25)	= \$1564 /year	_____ (g26)
Total breeding cost (g3) + (g26)	= \$2,924 /year	_____ (E) (to line E, page 2)

Operating Costs (continued)

Herd Replacement

This calculation accounts for the value of cull cows and the cost of purchasing replacement cows or heifers. Thus income from the sale of cull cows should not be included as income

and the cost of purchasing replacements should not be included as an expense. Calves that are kept as replacements should be valued at fair market value and included as revenue.

		Benchmark Farm		Your Farm	
Purchase price of a replacement cow transfer (a10)	=	\$1100	per cow	_____	(h1)
Selling price of a cull cow transfer (a11)	=	\$700	per cow	_____	(h2)
Net cost for each replacement (h1) - (h2)	=	\$400	per head	_____	(h3)
Number of cows - transfer (a1)	=	100	cows	_____	(h4)
Per cent replaced yearly - transfer (a7)	=	15	per cent	_____	(h5)
Number of cows replaced yearly (h4) x (h5)	=	15	cows	_____	(h6)
Total replacement costs (h3) x (h6)	=	\$6,000	/year	_____	(F)
				_____	(to line F, page 2)

Death Loss

Assume 1% death loss.

		Benchmark Farm		Your Farm	
Number of cows - transfer (a1)	=	100	cows	_____	(h7)
Per cent death loss	=	1	percent	_____	(h8)
Purchase price of replacement cows transfer from (a10)	=	\$1100	per head	_____	(h9)
Total amount for death loss (h7) x (h8) x (h9)	=	\$1,100	per year	_____	(G)
				_____	(to line G, page 2)

Operating Costs (continued)

Marketing

	Benchmark Farm	Your Farm
Number of calves sold	= 93 head	_____ (j1)
Number of cull cows	= 15 head	_____ (j2)
Total number of animals sold	= 108 head	_____ (j3)
Trucking	= \$5.00 /head	_____ (j4)
Selling commission	= \$15.75 /head	_____ (j5)
Check off	= \$2.00 /head	_____ (j6)
Yardage insurance	= \$0.01 /head	_____ (j7)
Brand fee	= \$1.50 /head	_____ (j8)
Hartford insurance	= \$.70 /head	_____ (j9)
Total marketing costs/animal sum (j4) to (j9)	= \$24.96 /head	_____ (j10)
Total marketing costs (j3) x (j10)	= \$2,696 /year	_____ (H) (to line H, page 2)

Community Pasture Fees

Assume 40 cows sent to PFRA community pasture.

Note: Breeding fees for cows in community pastures are included in Breeding on page 8.

	Benchmark Farm	Your Farm
Cost/cow/day	= \$0.35 /cow/day	_____ (k1)
Number of days	= 150 days	_____ (k2)
Cost per cow - (k1) x (k2)	= 68 cow	_____ (k3)
Calf cost for the season	= \$15 /calf	_____ (k4)
Cost per cow-calf pair - (k3) + (k4)	= \$83 /pair	_____ (k5)
Number of cows sent	= 40 cows	_____ (k6)
Total community pasture costs (k5) x (k6)	= \$3,320 /year	_____ (I) (to line I, page 2)

Operating Costs (continued)

Fuel, Lube and Repairs

Enter the total cost for all fuel and repairs that are due to the cow-calf enterprise

	Benchmark Farm	Your Farm
Fuel, lube and repair costs	= \$1,320 /year	_____ (J) (to line J, page 2)

Manure Removal

Assume manure removal done by custom corral cleaners for the Benchmark farm. If manure removal is contracted out, this cost

should be included here, as well as any other custom work.

	Benchmark Farm	Your Farm
Manure removal costs	= \$1,650 /year	_____ (K) (to line K, page 2)

Facility and Fence - Repair and Maintenance

For facility cost see Appendix 1.

	Benchmark Farm	Your Farm
Total facility replacement cost (transfer from page 24)	= \$34,512	_____ (m1)
Repair rate (2% of replacement cost)	= 2 %	_____ (m2)
Total facility repair cost - (m1) x (m2)	= \$690	_____ (m3)
Annual fence repair cost - estimate	= \$220	_____ (m4)
Total facility and fence repair cost (m3) + (m4)	= \$910	_____ (m5)
Insurance cost (\$0.50 per \$100 of facility value)	= \$172	_____ (m6)
Facility and fence cost (m5) + (m6)	= \$1,082 /year	_____ (L) (to line L, page 2)

Operating Costs (continued)

Miscellaneous

	Benchmark Farm	Your Farm
Assume miscellaneous expenses of	= \$700 /year	_____ (M) (to line M, page 2)
Subtotal operating costs	= \$33,485 /year	_____ (N)
(Total the operating costs (B) to (M) and enter in line (N), page 2)		

Operating Interest

	Benchmark Farm	Your Farm
Subtotal operating costs - transfer (N)	= \$41,055	_____ (m8)
divide by 2 to get average	= \$20,527	_____ (m9)
Operating interest rate	= 10 %	_____ (m10)
Total operating interest (m9) x (m10)	= \$2,052 /year	_____ (O) (to line O, page 2)

Fixed Costs

Fixed costs are the costs associated with an enterprise that would continue even if production was discontinued. In order for an enterprise to be profitable in the long run, it must be able to cover both fixed and operating costs. Fixed costs include: depreciation on facilities, fencing (included under grazing costs) and machinery; and interest on investment in facilities, machinery, breeding stock and pasture land (includes the fencing).

The fixed costs of depreciation and interest on investment can be equated to the funds that would be required to make payments on a loan to finance a large portion of the enterprise. Financing these fixed costs is a very important management decision and a general rule is that payments on debt and equity should not exceed 15% of gross income. If projected payments exceed this level then new financing options should be investigated.

Producers, if they are just starting out, should do a thorough analysis to determine the costs of constructing facilities and fencing and acquiring pasture land, machinery and breeding stock. Producers already in production, should use the cost of their present setup.

Depreciation is calculated with the following formula:

$$\frac{\text{Purchase price} - \text{salvage value}}{\text{Years of useful life}}$$

Interest on investment is calculated and included as it represents the real cost of investing capital in the cattle enterprise rather than into an investment of another type. The interest rate used represents current rate on term investments.

Interest on investment is calculated with the following formula:

$$\frac{\text{Purchase price} - \text{salvage value}}{2} \times \text{Rate of return (interest rate)}$$

Fixed Costs (continued)

Depreciation

i) Facilities (For information on facilities cost, see Appendix 1, page 24.)

	Benchmark Farm	Your Farm
Purchase price	= \$34,512	_____ (n1)
Salvage value	= 0	_____ (n2)
Years of useful life	= 20 years	_____ (n3)
Facilities depreciation	= \$1,725	_____ (P)
(n1) - (n2) ÷ (n3)		(to line P, page 2)

ii) Equipment (Benchmark farm - assume tractor is used 20% for cattle and loader is used 100% for cattle. Purchase price of a 70 hp tractor is \$46,600 and purchase price of a loader is \$6,900. Investment in equipment is \$9,320 (\$46,600 x 20%) for the tractor and \$6,900 for the loader for a total of \$16,220. Other equipment includes a mix mill and miscellaneous equipment with a total value of \$15,000.

	Benchmark Farm	Your Farm
Tractor and loader		
Purchase price (livestock share)	= \$16,220	_____ (n1)
Salvage value	= \$1,622	_____ (n2)
Years of useful life	= 10 years	_____ (n3)
Tractor and loader depreciation	= \$1,460	_____ (n4)
((n1) - (n2)) ÷ (n3)		
Other equipment (mix mill, etc.)		
Purchase price	= \$15,000	_____ (n5)
Salvage value	= \$1,500	_____ (n6)
Years of useful life	= 10 years	_____ (n7)
Other equipment depreciation	= \$1,350	_____ (n8)
((n5) - (n6)) ÷ (n7)		
Total equipment depreciation	= \$2,810	_____ (Q)
(n4) + (n8)		(to line Q, page 2)

Fixed Costs (continued)

Interest on Investment

i) Facilities (For information on facilities cost, see Appendix 1, page 24.)

	Benchmark Farm	Your Farm
Purchase price	= \$34,512	_____ (p1)
Salvage value	= 0	_____ (p2)
Interest Rate	= 7 %	_____ (p3)
Facilities interest on investment	= \$1,208	_____ (R)
((p1) + (p2)) ÷ 2 x (p3)		(to line R, page 2)

ii) Equipment (Benchmark farm - assume tractor is used 20% for cattle and loader is used 100% for cattle. Purchase price of a 70 hp tractor is \$46,600 and purchase price of a loader is \$6,900. Investment in

equipment is \$9,320 (\$46,600 x 20%) for the tractor and \$6,900 for the loader for a total of \$16,220. Other equipment includes a mix mill and miscellaneous equipment with a total value of \$15,000.

	Benchmark Farm	Your Farm
Tractor and loader		
Purchase price (livestock share)	= \$16,220	_____ (p4)
Salvage value	= \$1,622	_____ (p5)
Interest rate	= 7 %	_____ (p6)
Tractor and loader interest on investment	= \$625	_____ (p7)
((p4) + (p5)) ÷ 2 x (p6)		
Other equipment (mix mill, etc.)		
Purchase price	= \$15,000	_____ (p8)
Salvage value	= \$1,500	_____ (p9)
Interest rate	= 7 %	_____ (p10)
Other equipment interest on investment	= \$577	_____ (p11)
((p8) + (p9)) ÷ 2 x (p10)		
Total equipment interest on investment =	\$1,202	_____ (S)
(p7) + (p11)		(to line S, page 2)

Fixed Costs (continued)

iii) Breeding herd investment

		Benchmark Farm		Your Farm	
Value of a cow	=	\$1,100	/cow	_____	(p12)
Cull value of a cow	=	\$700	/cow	_____	(p13)
Average value of a cow	=	\$900	/cow	_____	(p14)
$((p12) + (p13))/2$					
Number of cows - transfer from (a1)	=	100	cows	_____	(p15)
Interest rate	=	7	%	_____	(p16)
Total breeding herd interest	=	\$6,300	/year	_____	(T)
(p14) x (p15) x (p16)				(to line T, page 2)	

Grazing Costs

The benchmark enterprise was set up with that 40 cows sent to community pasture (community pasture costs are included as a cash expense as item number eight). Of the remaining 60 cows, 24 would be grazed on Crown lease land and 36 would be grazed on owned land.

To calculate the cost of grazing interest on the investment in pasture land and depreciation and interest on the interest in pasture improvements needs to be calculated. In this example pasture improvements includes

fencing and water development. Other improvements that may need to be considered are land improvements such as sowing tame hay, clearing bush and weed control and fertilizer. Producers should fill in the appropriate sections as they relate to their pasture program and add additional items if they are needed.

If stubble grazing is utilized in the fall, then producers should include fencing costs for the stubble area. These cost items could be added as the pasture fence costs.

i) Fence costs (cost per mile)

		Benchmark Farm		Your Farm	
Depreciation					
Original cost per mile	=	\$2,600	/mile	_____	(q1)
Salvage value per mile	=	\$500	/mile	_____	(q2)
Years of use	=	20	years	_____	(q3)
Depreciation cost of fence	=	\$105	/mile	_____	(q4)
$((q1) - (q2)) \div (q3)$					

Fixed Costs (continued)

	Benchmark Farm	Your Farm
Interest on Investment		
Original cost per mile	= \$2,600 /mile	_____ (q5)
Salvage value per mile	= \$500 /mile	_____ (q6)
Interest rate	= 7 %	_____ (q7)
Interest on investment in the fence	= \$108 /mile	_____ (q8)
$((q5) + (q6)) \div 2 \times (q7)$		
Total fence cost per mile	= \$213 /mile	_____ (q9)
$(q4) + (q8)$		

ii) Water development (cost per dugout - cost of water development in the yard is included in the facility costs.)

	Benchmark Farm	Your Farm
Depreciation		
Original cost per dugout	= \$3,000	_____ (r1)
Salvage value per dugout	= \$500	_____ (r2)
Number of years of use	= 20 years	_____ (r3)
Depreciation per dugout	= \$125	_____ (r4)
$((r1) - (r2)) \div (r3)$		
Interest on investment		
Original cost per dugout	= \$3,000	_____ (r5)
Salvage value per dugout	= \$500	_____ (r6)
Interest rate	= 7 %	_____ (r7)
Interest on dugout investment	= \$123 /dugout	_____ (r8)
$((r5) + (r6)) \div 2 \times (r7)$		
Total cost of dugout	= \$248 /dugout	_____ (r9)

Fixed Costs (continued)

iii) Crown land lease (Assume: pasture rated at 55 AUM/quarter. Lease rate for 1999 of \$4.72/AUM. One AUM (animal unit month) equals the pasture needed for one cow and her calf for a period of one month.)

		Benchmark Farm		Your Farm
Cows to be pastured	=	24 cows	_____	(s1)
Number of months on pasture	=	6 months	_____	(s2)
Number of AUM required - (s1) x (s2)	=	144 AUM	_____	(s3)
Number of AUM per quarter section	=	55 AUM/qtr	_____	(s4)
Quarter sections needed - (s3) ÷ (s4)	=	3 quarters	_____	(s5)
Stocking rate (cows/quarter section)	=	8 /cows/qtr	_____	(s6)
(s1) ÷ (s5)				
Rental rate per quarter section	=	\$260 /quarter	_____	(s7)
(55 AUM x \$4.72)				
Taxes per quarter section	=	\$180 /quarter	_____	(s8)
Total rental and taxes per quarter	=	\$440 /quarter	_____	(s9)
(s7) + (s8)				
Total rental and tax cost	=	\$1,320	_____	(s10)
(s5) x (s9)				
Number of miles fence	=	3 miles	_____	(s11)
Fence costs per mile - transfer from (q9)	=	\$213 /mile	_____	(s12)
Total fence costs - (s11) x (s12)	=	\$639	_____	(s13)
Number of dugouts	=	1 dugouts	_____	(s14)
Cost per dugout - transfer from (r9)	=	\$248 /dugout	_____	(s15)
Total dugout costs - (s14) x (s15)	=	\$248	_____	(s16)
Total cost of Crown leased pasture	=	\$2,207 /year	_____	(s17)
(s10) + (s13) + (s16)				

Fixed Costs (continued)

iv) Owned Pasture (Assume the same stocking rate as for Crown lease.)

		Benchmark Farm		Your Farm	
Cows to be pastured	=	36	cows	_____	(t1)
Stock rate (cows per quarter section)	=	8	cows/qtr	_____	(t2)
Quarter sections needed - (t1) ÷ (t2)	=	4.5	quarters	_____	(t3)
Value of pasture land per quarter	=	\$16,000	/quarter	_____	(t4)
Investment rate	=	4	%	_____	(t5)
Investment cost per quarter	=	\$640	/quarter	_____	(t6)
(t4) x (t5)					
Taxes per quarter	=	\$180	/quarter	_____	(t7)
Cost per quarter - (t6) + (t7)	=	\$820	/quarter	_____	(t8)
Investment cost of owned pasture	=	\$3,690	/year	_____	(t9)
(t3) x (t8)					
Number of miles fence	=	3	miles	_____	(t10)
Fence costs per mile - transfer (q9)	=	\$213	/mile	_____	(t11)
Total fence costs - (t10) x (t11)	=	\$639		_____	(t12)
Number of dugouts	=	1	dugouts	_____	(t13)
Cost per dugout - transfer (r9)	=	\$248	/dugout	_____	(t14)
Total dugout costs - (t13) x (t14)	=	\$248		_____	(t15)
Total cost of owned pasture	=	\$4,577	/year	_____	(t16)
(t9) + (t12) + (t15)					
Total pasture cost (s17) + (t16)	=	\$6,784	/year	_____	(t17)
(excluding community pasture)				_____	(to line U, page 2)
Average pasture cost/cow (excluding community pasture)					
(t17) ÷ 60 cows	=	\$113/cow		_____	(t18)

Effect of Productivity on Profitability of Benchmark Enterprise

The sale of calves is the only source of income for a cow-calf enterprise. Therefore, it stands to reason that anything that affects the number and/or weight of calves weaned will also effect the profitability of the cow-calf enterprise.

The following table demonstrates the effect of two production factors on the total weight of calves produced.

Table 1
Effect of Weaning Percent on the Cash Income of the Benchmark Enterprise
(100 cows - market price for calves = \$1.22 per pound)

Weaning per cent	85%	90%	95%
Average weaning weight (pounds)	540	540	540
Average weaning weight per cow (pounds)	459	486	513
Net cash income for herd	\$12,898	\$16,192	\$19,486
Net cash income per cow	\$113	\$162	\$195

Table 1 clearly shows that weaning per cent has a definite impact on the profitability of a cow-calf enterprise.

There are several factors that interact to result in the weaning per cent. They are:

- i) Number of open cows is a result of:
 - bull fertility
 - cow condition at breeding
 - cow genetics
- ii) Calving per cent is a result of:
 - number of cows conceived
 - number of abortions
- iii) Post calving death loss is a result of:
 - herd health program
 - management

Table 2
Effect of Calving Interval on the Net Cash Income of the Benchmark Enterprise

Calving interval ¹	21 days	35 days	45 days
Average weaning weight per calf ²	540	512	484
Net cash income for herd ³	\$17,839	\$14,679	\$11,519
Net cash income/cow	\$178	\$147	\$115

¹ Calving interval, in this case, refers to the average number of days that calves are born after calving season starts. (A calving interval of 21 days means that if your first calf is born on March 1, then your herd average calving date is March 21.)

² Assumes 2 pounds/day gain

³ Assumes price of \$1.22/pound

Table 2 shows the importance of having a short calving interval. Producers should strive to have all cows bred within a 42 day period. This will ensure that the calving interval is short and will result in a higher average weaning weight and better use of the producer's time.

Calving intervals can be shortened by:

i) ensuring that cows are on a rising plane of nutrition before the breeding season;

ii) adequate "bull power" and ensuring that the bulls used are fertile; and

iii) shortening the breeding period followed by pregnancy testing and culling open cows.

A short calving interval will ensure a uniform weaning weight and cattle buyers will pay a premium for uniform lots of calves.

1998 Production Year Saskatchewan Cow-calf Costs and Returns Program

(i) Cow-Calf Enterprise Summary

The following information is taken from the publication "*1998 Production Year Saskatchewan Cow-calf Costs and Returns Program*".

The information is compiled from 34 co-operators with an average opening inventory of 135 breeding females.

Enterprise Analysis is done on a **whole herd basis**. The variable costs recorded are for the whole herd, which includes 4 bulls, 115 cows, 20 bred heifers, 20 heifer calves and 3 cull cows. Winter feed costs per cow includes the costs to feed all animals in the herd including replacement animals and bulls.

Value of Production is the accrual value of the production generated in the cow-calf enterprise. Value of production includes an *Inventory Adjustment* to account for the changes in value of the inventory as a result of herd expansion or increasing values of animals in the herd. **Value of Production** may not be the same as cash income.

Farm produced feeds are priced to the cow-calf enterprise at *fair market value*.

For the Costs and Returns Program, **Gross Margin (F)** represents the amount that the **Value of Production** exceeds the **Cash Costs** of production. It represents the amount that is left to cover personal costs, depreciation and capital payments on enterprise debts. For many farm/ranches the **Value of Production** will not be the same as the cash income, especially when a herd is expanding. The inventory adjustment calculation can be a major component of the value of production calculation. Gross margin may not be a good indicator of the cash flow position in an enterprise. It does indicate the amount that is available to cover debt, depreciation and personal draw if all production was turned into income

Income from the cow-calf enterprise has been trending upwards over the three years of the study.

(ii) Costs and Returns 1996, 1997, 1998 with a Three Year Weighted Average

	Number of Producer Number of Cows	1996 7 122	1997 15 151	1998 34 135	3 year Weighted Average
(A)		\$/Cow	\$/Cow	\$/Cow	\$/Cow
1. Weaned Calves		361.38	436.63	461.27	442.96
2. Feeder Calves		0.00	4.99	12.67	9.01
3. Slaughter Cattle		5.67	1.26	0.00	1.00
4. Purebred Calves		0.00	0.00	0.46	0.27
5. Baby Calves		6.66	0.00	0.00	0.74
6. Cull Cows/Open Heifers		132.66	89.31	94.25	97.05
7. Bulls		5.79	9.04	12.07	10.48
8. Bred Cows/Bred Heifers		105.39	14.84	34.29	36.45
9. Miscellaneous Receipts		0.00	0.35	4.73	2.92
10. Government Programs		1.05	0.08	2.64	1.71
11. Inventory Adjustment		-27.14	132.50	130.77	113.79
12. Less: Cattle Purchases		111.03	89.99	135.68	119.52
VALUE OF PRODUCTION		480.44	599.00	617.46	596.86
(B)					
1. Winter Feed		191.38	162.93	132.62	148.03
2. Bedding		23.00	11.91	29.23	23.45
3. Pasture		88.08	118.32	135.07	124.94
4. Veterinary & Medicine		23.70	15.96	20.60	19.58
5. Breeding Fees/ Bull Rental		2.58	6.16	1.85	3.20
6. Trucking & Marketing Charges		16.43	13.48	11.01	12.34
7. Fuel		15.88	12.55	15.30	14.56
8. Repairs - Machine		17.53	7.27	15.98	13.59
9. Repairs - Corrals & Buildings		17.16	8.17	5.30	7.46
10. Utilities & Miscellaneous Expenses		30.67	34.72	33.11	33.31
11. Custom Work & Specialized Labour		33.11	15.49	12.44	15.63
12. Operating Interest Paid		6.01	2.29	7.11	5.57
13. Paid Labour & Benefits		6.47	5.45	5.84	5.80
14. Unpaid Labour		92.44	51.71	56.44	59.04
VARIABLE COSTS		554.43	466.43	481.89	486.49
(C)					
1. Share/Lease Cattle Payments		0.00	2.41	2.05	1.93
2. Taxes, Water Rates, Lic. & Insurance		10.67	8.20	6.70	7.58
3. Equipment & Building	a) Depreciation	28.52	24.28	33.83	30.44
	b) Lease Payments		0.00	0.00	0.00
4. Paid Capital Interest		0.59	11.21	12.04	10.53
TOTAL CAPITAL COSTS		39.79	46.10	54.62	50.47
(D) CASH COSTS (B+C-B14-C3)		483.26	436.55	446.24	447.49
(E) TOTAL PRODUCTION COSTS (B+C)		604.22	512.54	536.51	536.97
(F) GROSS MARGIN	(A-D)	-2.82	162.46	171.22	149.37
RETURN TO UNPAID LABOUR (A-E+B14)		-31.35	138.18	137.39	118.93
RETURN TO INVESTMENT (A-E+C4)		-123.19	97.88	92.99	70.42
RETURN TO EQUITY	(A-E)	-123.79	86.47	80.95	59.89
4.5%					
INVESTMENT					
Land		47.07	44.99	35.57	39.61
Buildings (Average age: 0.0 Yrs)		249.77	238.76	207.70	221.49
Machinery (Power 4.2 Yrs, Non-Power 12.3 Yrs)		175.55	131.87	252.23	208.37
Irr. Mach. (Power 0.0 Yrs, Non-Power 0.0 Yrs)		0.00	0.00	0.00	0.00
Breeding Stock		1,001.00	1,011.00	1,181.00	1111.37
TOTAL		1,473.00	1,427.00	1,677.00	1580.85

Weighted average is calculated as the average for all 7709 cows in our three year data sample.

Group Average 1998 - 1998 Cow-Calf Management Summary
Weaned-Calf Enterprises - 135.00 Cows Wintered - Number of Producers: 34

BREEDING PERFORMANCE

	Cows	Heifers	Total
Start of Breeding Period	10/06/1997	07/06/1997	
- no. of days	119.48	107.44	127.70
Calving Period	80.10	69.09	88.77
Conception Rate (bred females per exposed)	92.88%	89.62%	92.38%
Calving Rate (livebirths per bred female)	96.41%	90.45 %	95.52%
Weaning Rate (weaned per livebirth)	96.51%	101.28%	97.18%
Calf Crop (weaned per exposed)	86.41%	82.10%	85.75%

These rates are adjusted for purchases/sales of bred females and cow-calf pairs.

FEMALES EXPOSED 143.00

+ Bred Females Purchased	8.88
- Bred Females Sold	4.09
- Open Cows Culled	6.50
- Open Females Kept Back	4.68
- Cow deaths prior to calving	.09

BRED FEMALES 136.53

COWS/HEIFERS CALVED 133.29

+ Sets of Twins	1.91
- Calves Born Dead/Aborted	4.79
LIVEBIRTHS	130.41
- Pasture Loss (after 24 hrs)	1.47
+ Baby Calves Purchased	.88
- Baby Calves Sold	.76
CALVES WEANED	126.74

CALVING EASE

	Cows	Heifers	Total
Caesarean Sections	.29%	2.93%	.67%
Hard Pulls	1.13%	7.76%	2.09%
Moderately Assisted	3.57%	17.59%	5.59%
Unassisted Births	95.01%	71.72%	91.65%

CALF DEATH LOSS

Born Dead	4.79 head	Pasture Loss	1.47 head
a) Stillbirths	2.09	a) Scours	.18
b) Physical abnormalities	.18	b) Pneumonia	.06
c) Injury at birth	.65	c) Diseases/Accidental/Predator	.06
d) Other maternal factors	.29	d) Storms/weather	.03
e) Unknown ???	1.59	e) Unknown ???	1.15

FEED CONSUMPTION

	Tonnes/Cow	Market Value (\$/tonne)	Days on Feed
a) Hay	1.30	\$50.03	152.04
b) Silage (as-fed)	.28	\$45.71	
c) Greenfeed	.27	\$46.01	
d) Straw	1.00	\$29.33	
e) Grains	.28	\$75.00	

PHYSICAL PERFORMANCE INDICATORS

Calves born in first 2 cycles	49.65%	Pasture season	172.64
Pounds weaned/cow exposed	471.80	Aftermath Grazing	33.29
Pounds weaned/cow wintered	516.51	Cows per Bull	28.10
Wean weight as a % of cow weight	46.84%	Cull Rate (per female exposed)	8.80%
Weight per day of age (lbs.)	(.04)	Change in herd size from Jan. 1	9.48%
Days from weaning to sale	2.74	Labour hours per cow	6.30

Growth (weaning weight)	540.90
Open Cows	7.82%
Length of Calving Period	88.77
Death loss of calves	1.13

Weaning Date:	13/10/1998
63.68 Steer Calves @	552.45 lbs.
65.24 Heifer Calves @	529.64 lbs.

Appendix 1 - Benchmark Facility Costs

Buildings and handling facilities¹

a) Porosity fence: 850	
Material cost	\$ 2,445
Labour cost: 1/2 (2223)	<u>\$ 1,223</u>
Total cost	\$ 3,668
b) Open front pole shed: 130 x 24	
Material cost	\$ 7,463
Labour cost: 1/2 (\$4,440)	<u>\$ 3,732</u>
Total cost	\$11,195
c) Feed bunks: 235	
Material cost	\$ 1,266
Labour cost 1/2 (\$753)	<u>\$ 634</u>
Total cost	\$ 1,900
d) Water requirement	
Well, trenching, power	
Material cost	\$ 3,990
Labour cost	<u>\$ 2,660</u>
Total cost	\$ 6,650
e) Line fences, working chute	
Pens, gates: 12300 lineal feet	
Material cost	\$ 5,525
Labour cost 1/2 (3,287)	<u>\$ 2,763</u>
Total Cost	\$ 8,284
f) Squeeze/head gate	
Loading chute, prefab	
Material cost	\$ 2,252
Labour cost	<u>\$ 563</u>
Total Cost	\$ 2,815
Total material cost	\$22,941
Total cost, including labour	\$34,512

¹1985 replacement cost estimation (detail in Beef Cattle Budgeting Data 100) adjusted by the farm input price index to reflect 1998 prices and also adjusted to a 100 cow herd size.

